Meningitis, Viral ("Aseptic")

Note: This chapter focuses only on meningitis caused by viruses. For information about other kinds of meningitis, refer to the chapters entitled "Meningitis, General (multiple etiologies)" and "Meningococcal Infection (Invasive)."

1) THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agent

Viral meningitis may be caused by many different viruses. Coxsackievirus and echovirus, both members of the enterovirus group, are responsible for the majority of identified viral meningitis cases in the United States. Adenovirus, mumps, measles, herpes simplex, varicella and arboviruses can also cause meningitis.

B. Clinical Description

Meningitis is inflammation of the membranes covering the brain and spinal cord. Viral meningitis is relatively common. Due to the many viruses which can cause viral meningitis, the clinical description of disease can vary. Illness is generally characterized by fever, stiff neck, headache, nausea and vomiting, and, variably, rash. Other gastrointestinal and respiratory symptoms have been reported by those infected with enteroviruses. Illness typically resolves within 10 days, and most individuals have a complete recovery.

C. Reservoirs

Humans are the reservoir for enteroviruses, mumps, measles, herpes simplex, and varicella viruses. Humans are incidental hosts for arboviruses. Natural reservoirs for many arboviruses remain unknown, but they may include birds, rodents, reptiles, amphibians, or other animals.

D. Modes of Transmission

The viruses that cause meningitis are transmitted primarily from person-to-person and, in the case of arboviruses, from arthropod vectors to humans. Person-to-person transmission modes vary, depending on the particular virus, and include fecal-oral transmission (enteroviruses), true airborne transmission (measles, varicella), respiratory droplet transmission (enteroviruses, mumps), and direct contact (mumps, measles, herpes simplex, varicella). Arboviruses are transmitted to humans by arthropod vectors (including mosquitoes, ticks, sand flies and midges).

E. Incubation Period

The incubation period is variable. For most enteroviruses it is 3–6 days. For most arboviruses it is 2–15 days.

F. Period of Communicability or Infectious Period

Enteroviruses may be shed in feces for several days to many weeks after symptoms have resolved. Enteroviruses may also be shed in respiratory secretions, usually for no longer than 1 week following symptoms. Arboviruses are generally not communicable from person-to-person.

G. Epidemiology

Viral meningitis occurs worldwide, as epidemics and as sporadic cases. In the United States, increases in cases of viral meningitis caused by enteroviruses are typically observed in the summer and fall. Enteroviral meningitis is most common in young children. The incidence of arboviral meningitis reflects the seasonal patterns of the vectors responsible for transmission.

2) REPORTING CRITERIA AND LABORATORY TESTING SERVICES

A. What to Report to the Massachusetts Department of Public Health

Report clinically compatible cases diagnosed by a healthcare provider as viral (aseptic) meningitis, which are accompanied by:

- Laboratory results that indicate *no* evidence of bacterial or fungal meningitis (*e.g.*, cultures are negative); or
- Laboratory results that indicate a specific viral cause (*e.g.*, enterovirus).

Note: See Section 3) C below for information on how to report a case.

B. Laboratory Testing Services Available

The Massachusetts State Laboratory Institute may provide arbovirus or enterovirus testing during outbreaks. For more information contact the Viral Isolation Laboratory at (617) 983-6383.

3) DISEASE REPORTING AND CASE INVESTIGATION

A. Purpose of Surveillance and Reporting

- To track increases in expected numbers of cases, thus facilitating control and prevention initiatives.
- To focus educational and preventive efforts.

B. Laboratory and Healthcare Provider Reporting Requirements

Refer to the lists of reportable diseases (at the end of this manual's Introduction) for information.

C. Local Board of Health Reporting and Follow-Up Responsibilities

1. **Reporting Requirements**

Massachusetts Department of Public Health (MDPH) regulations (*105 CMR 300.000*) stipulate that each local board of health (LBOH) must report the occurrence of any case of viral meningitis, as defined by the reporting criteria in Section 2) A above. Current requirements are that cases be reported to the MDPH Division of Epidemiology and Immunization, Surveillance Program using an official MDPH *Generic Disease Reporting Form* (in Appendix A). Refer to the *Local Board of Health Reporting Timeline* (at the end of this manual's introductory section) for information on prioritization and timeliness requirements of reporting and case investigation.

2. **Case Investigation**

a. It is the LBOH responsibility to complete an MDPH *Generic Disease Reporting Form* (in Appendix A) by interviewing the case and others who may be able to provide pertinent information. Much of the information required on the form can be obtained from the case's healthcare provider or the medical record.

b. Use the following guidelines to assist you in completing the form:
   1) Record meningitis as the type of illness being reported.
   2) Accurately record the case's demographic information.
   3) Record the date of symptom onset, symptoms, whether hospitalized and other associated dates.
   4) Indicate that culture results were negative for bacteria and fungi. If applicable indicate the type of virus identified and the type of specimen from which it was identified. This information can be recorded in the "Comments" section at the bottom of the page.
   5) Complete the Import Status section to indicate where the illness was acquired. If unsure, check "Unknown."

6) Include any additional comments regarding the case in the "Comments" section at the bottom of the page.
7) If you have made several attempts to obtain case information, but have been unsuccessful (*e.g.,* the case or healthcare provider does not return your calls or respond to a letter, or the case refuses to divulge information or is too ill to be interviewed), please fill out the form with as much information as you have gathered. Please note on the form the reason why it could not be filled out completely.

c. After completing the form, attach lab report(s) and mail (in an envelope marked "Confidential") to:
MDPH, Division of Epidemiology and Immunization
Surveillance Program, Room 241
305 South Street
Jamaica Plain, MA 02130

d. Institution of disease control measures is an integral part of case investigation. It is the LBOH responsibility to understand, and, if necessary, institute the control guidelines listed below in Section 4), Controlling Further Spread.

4) CONTROLLING FURTHER SPREAD

A. Isolation and Quarantine Requirements (*105 CMR 300.200*)

None.

B. Protection of Contacts of a Case

None.

C. Managing Special Situations

Daycare or School

Any case of meningitis in a daycare or school often causes panic among staff members, parents and the community. A *Meningitis Public Health Fact Sheet* is available from the Division of Epidemiology that explains meningitis and its various causes. A "Sample Letter to Parents" about viral meningitis is also available and can be obtained by contacting the Division of Epidemiology and Immunization. There is *no* need for any medical treatment for people who have been in contact with someone who has viral meningitis. The most effective way to prevent the spread of these viruses is through proper handwashing and good general hygiene, and this should be communicated to the school or daycare facility. It should be noted that most people with enteroviral infections do not develop meningitis but may have a variety of other symptoms (*e.g.,* gastrointestinal or respiratory).

Cluster of Cases Observed/Outbreak Suspected

If the number of reported cases in your city/town is higher than usual, or if you suspect an outbreak, investigate to determine source of infection and mode of transmission. Identification of common risk factors, such age, school or workplace, may lead to the implementation of effective prevention and control measures. Consult with the epidemiologist on-call at the Division of Epidemiology and Immunization at (617) 983-6800 or (888) 658-2850. The Division can help determine a course of action to prevent further cases and can perform surveillance for cases that may cross several town lines and therefore be difficult to identify at a local level.

D. Preventive Measures

Personal Preventive Measures/Education

Since most forms of viral meningitis are caused by enteroviruses, which are fecally shed, individuals should be advised to practice good hygiene, especially frequent and thorough handwashing.

A *Meningitis Public Health Fact Sheet* can be obtained from the Division of Epidemiology and Immunization or through the MDPH website at <http://www.state.ma.us/dph/>. Click on the "Publications" link and scroll down to the Fact Sheets section.

ADDITIONAL INFORMATION

The following is the formal Centers for Disease Control and Prevention (CDC) case definition for aseptic meningitis. It is provided for your information only; it is not necessary to use this information for reporting or investigating a case. (CDC case definitions are used by the state health department and CDC to maintain uniform standards for national reporting.) For reporting to the MDPH, always use the criteria outlined in Section 2) A of this chapter.

Clinical description
A syndrome characterized by acute onset of meningeal symptoms, fever, and cerebrospinal fluid pleocytosis, with bacteriologically sterile cultures.

Laboratory criteria for diagnosis
No evidence of bacterial or fungal meningitis.

Case classification
Confirmed: A clinically compatible case diagnosed by a physician as aseptic meningitis, with no laboratory evidence of bacterial or fungal meningitis.

Comment
Aseptic meningitis is a syndrome of multiple etiologies, but many cases are cause by a viral agent.

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